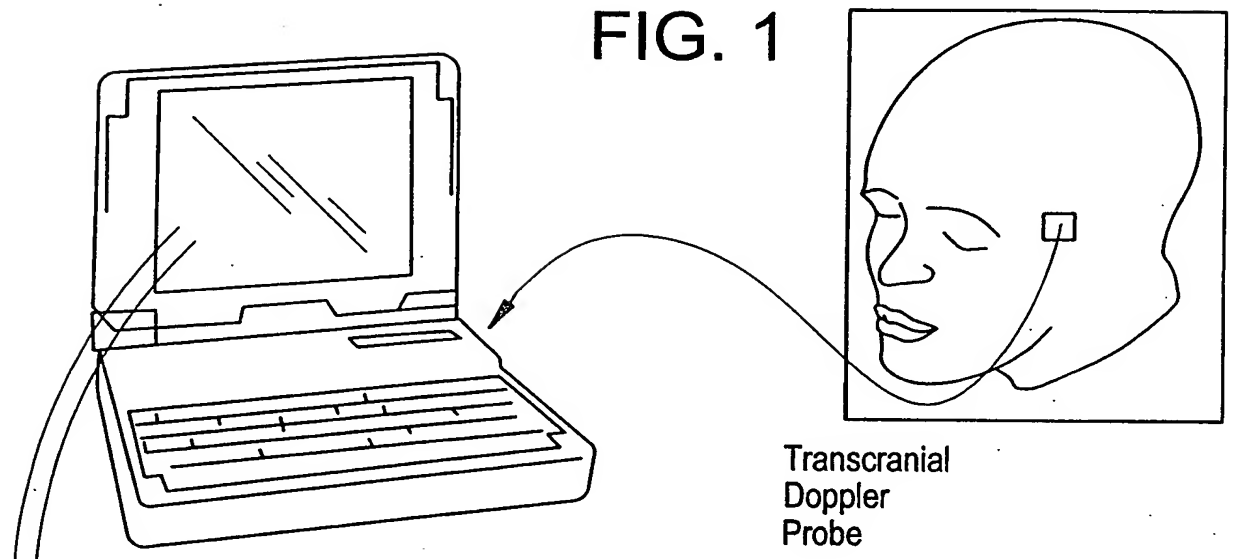
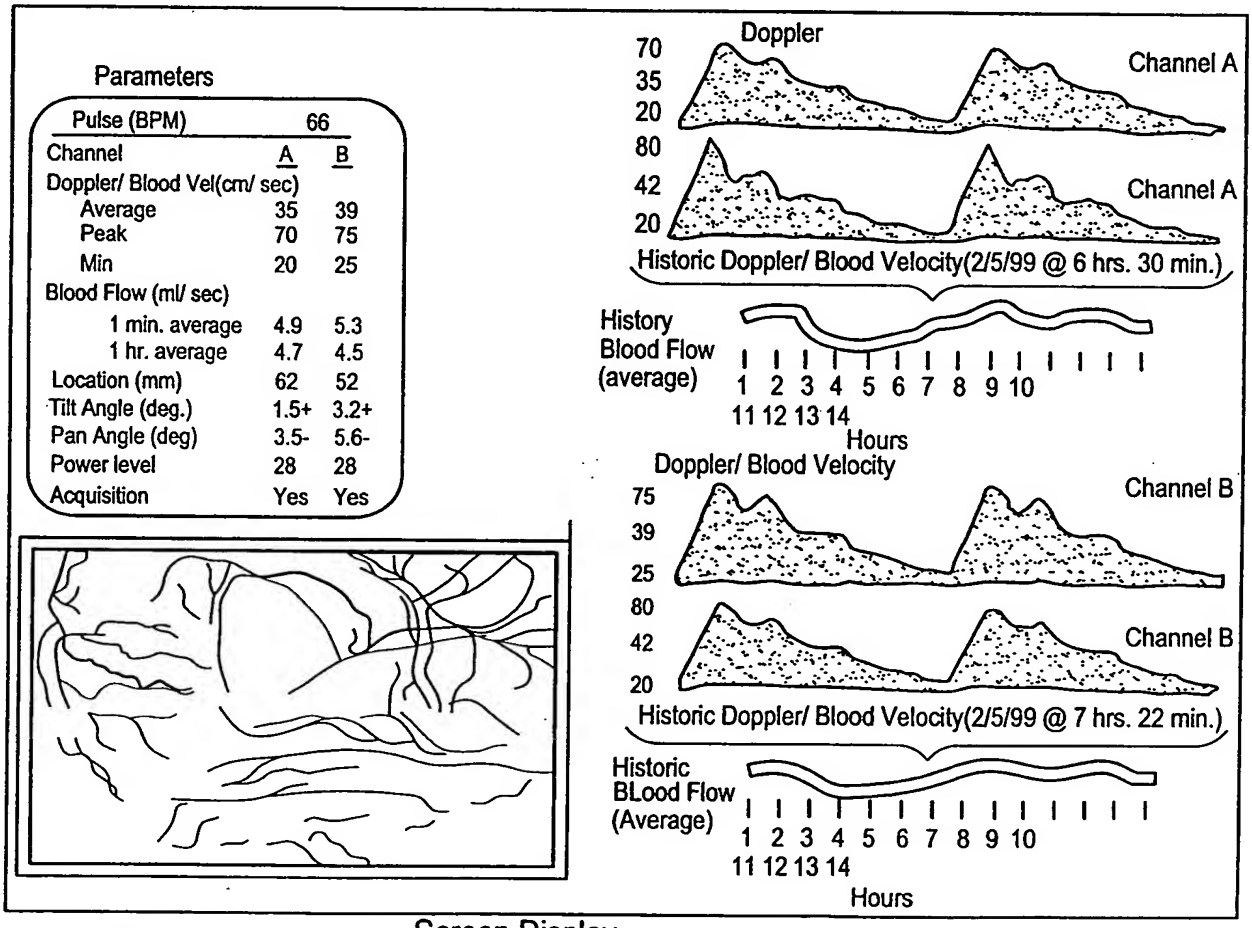
FIG. 1





Screen Display

A thin flexible bundle of cables makes a 90-degree turn to exit the pad housing parallel to the planar phased array transducer so that the pad can be easily attached to the head of a trauma victim or surgical patient.

FIG. 2A

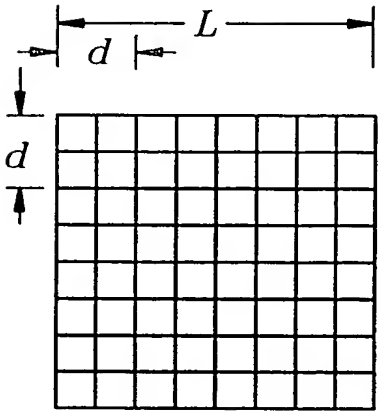


FIG. 2B

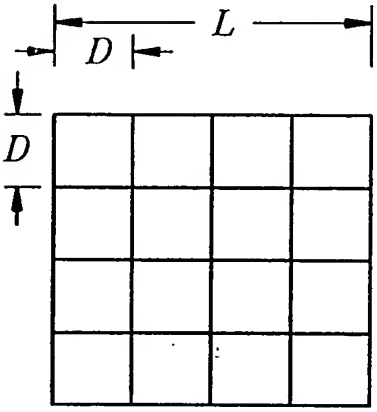


FIG. 3

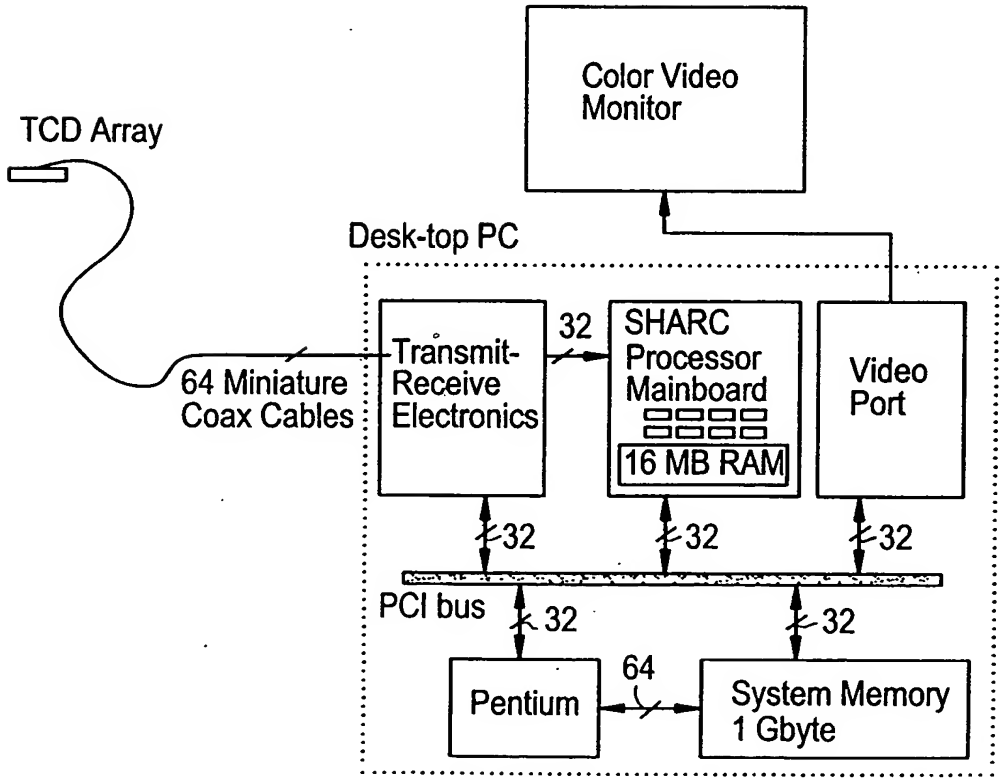


FIG. 4

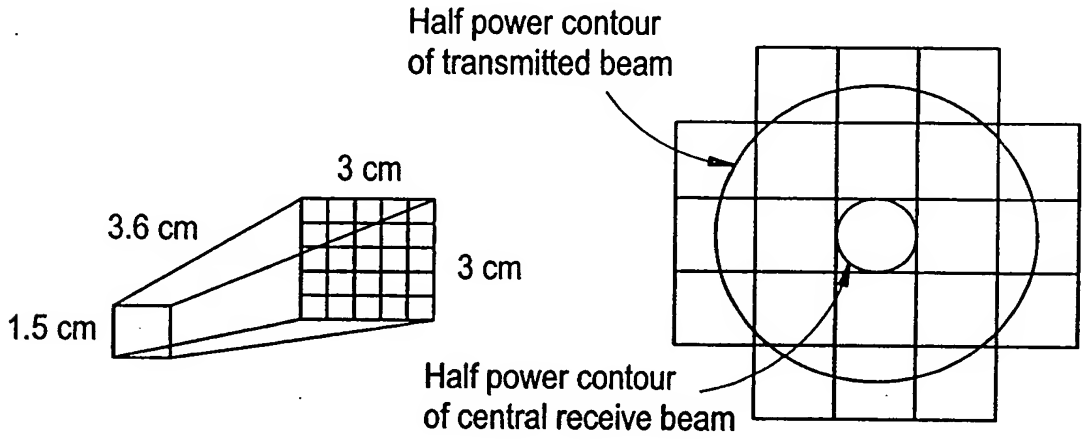


FIG. 5A

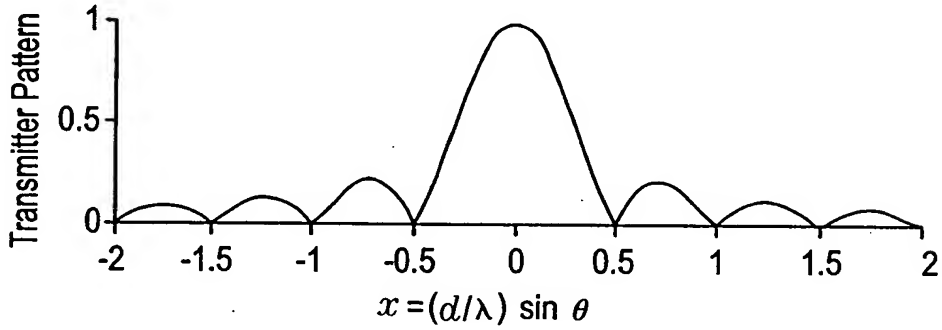


FIG. 5B

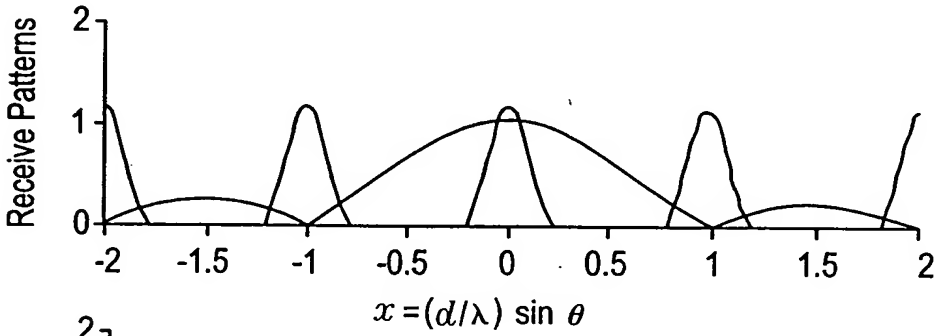


FIG. 5C

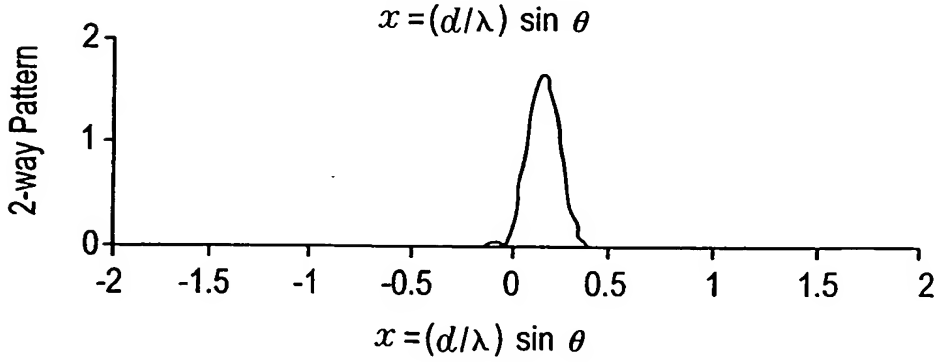


FIG. 6A

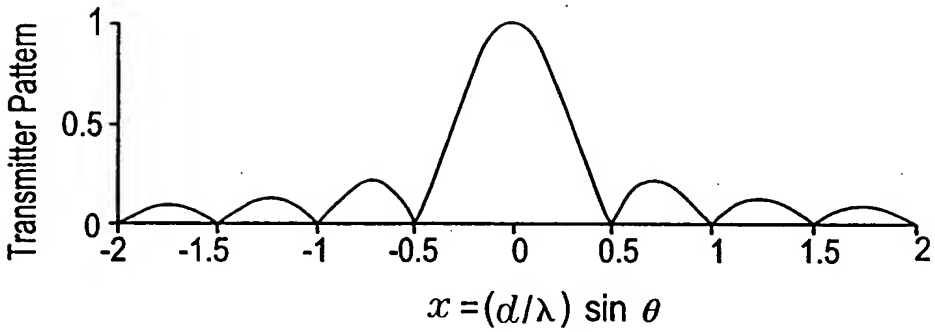


FIG. 6B

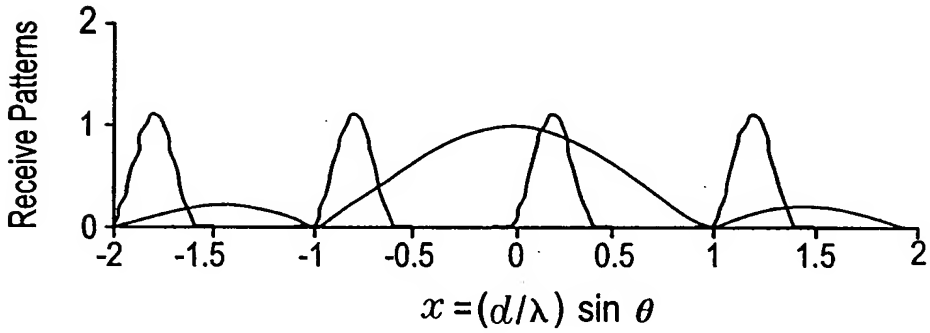


FIG. 6C

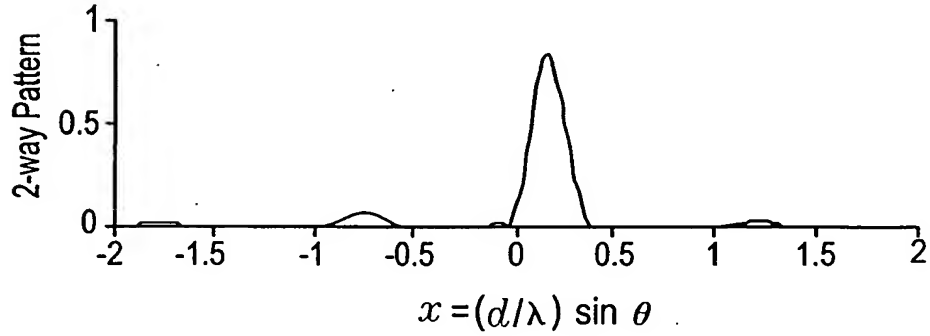


FIG. 7

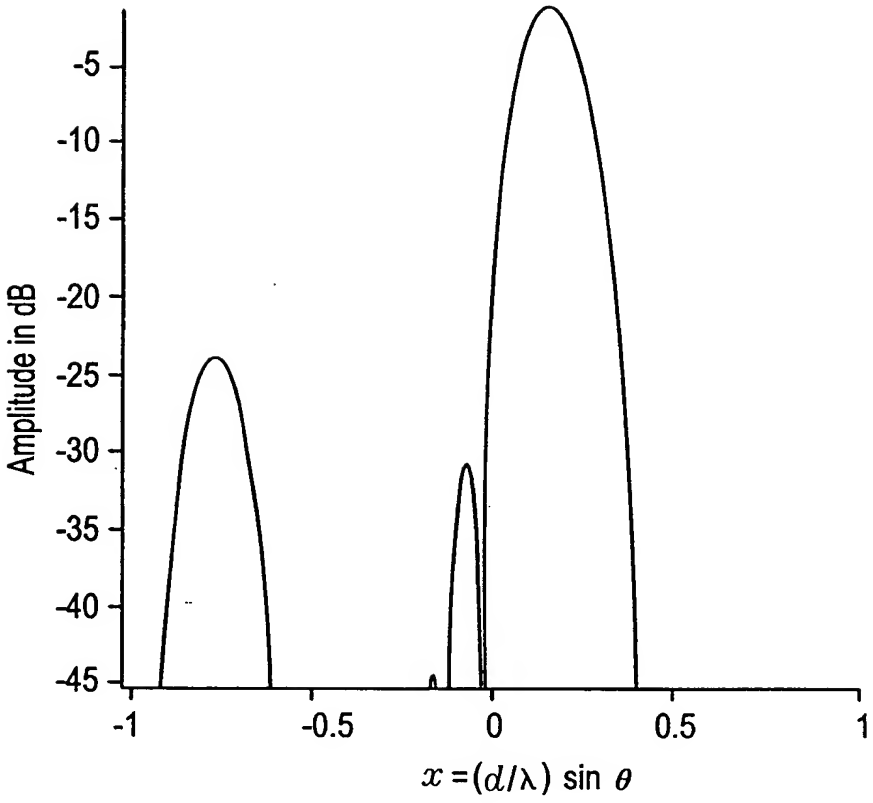

-5
-10
-15
-20
-25
-30
-35
-40
-45
Amplitude in dB
-1
-0.5
0
0.5
1
$x = (d/\lambda) \sin \theta$

FIG. 8

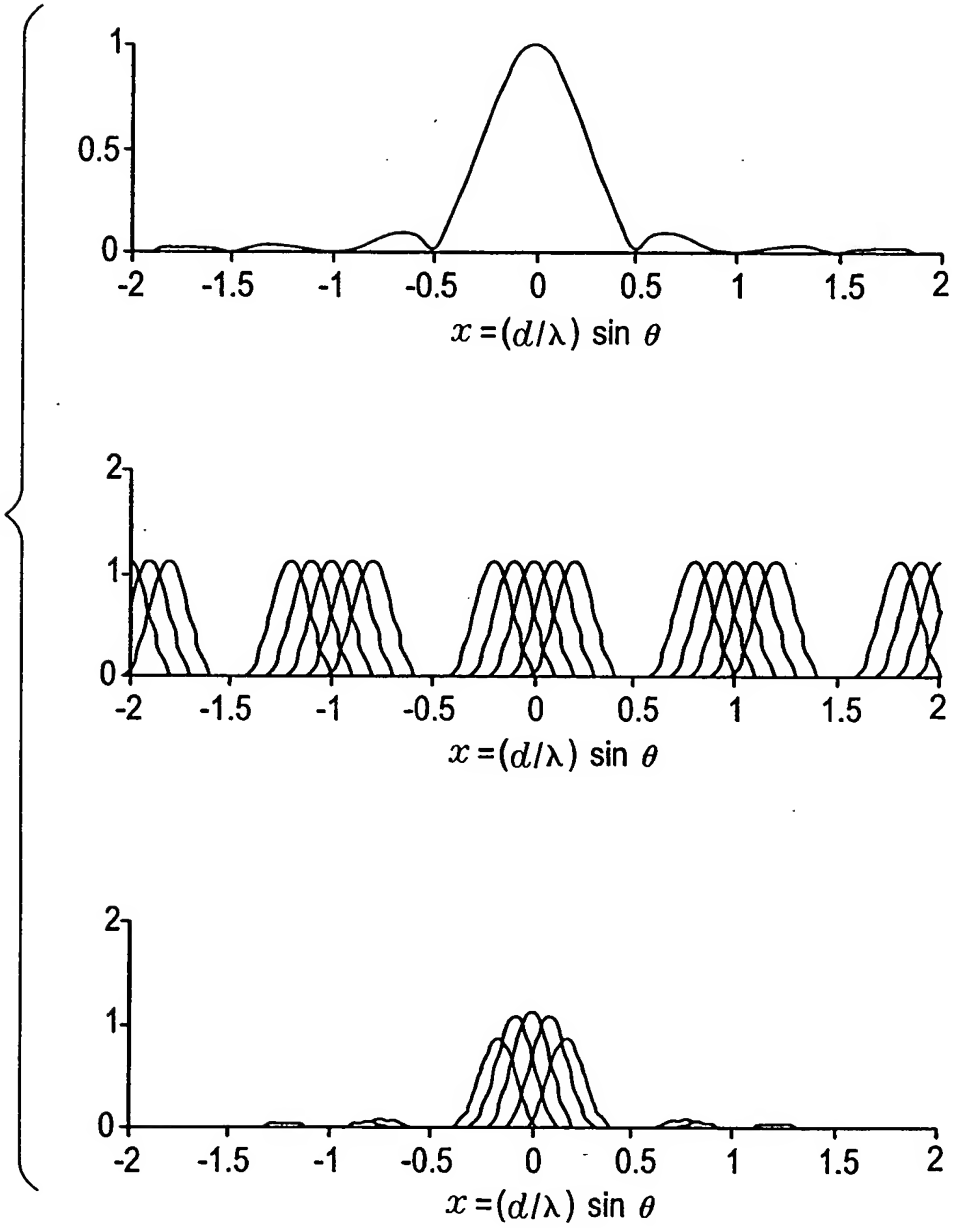

1
0.5
0
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
$x = (d/\lambda) \sin \theta$
2
1
0
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
$x = (d/\lambda) \sin \theta$
2
1
0
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2
$x = (d/\lambda) \sin \theta$

FIG. 9

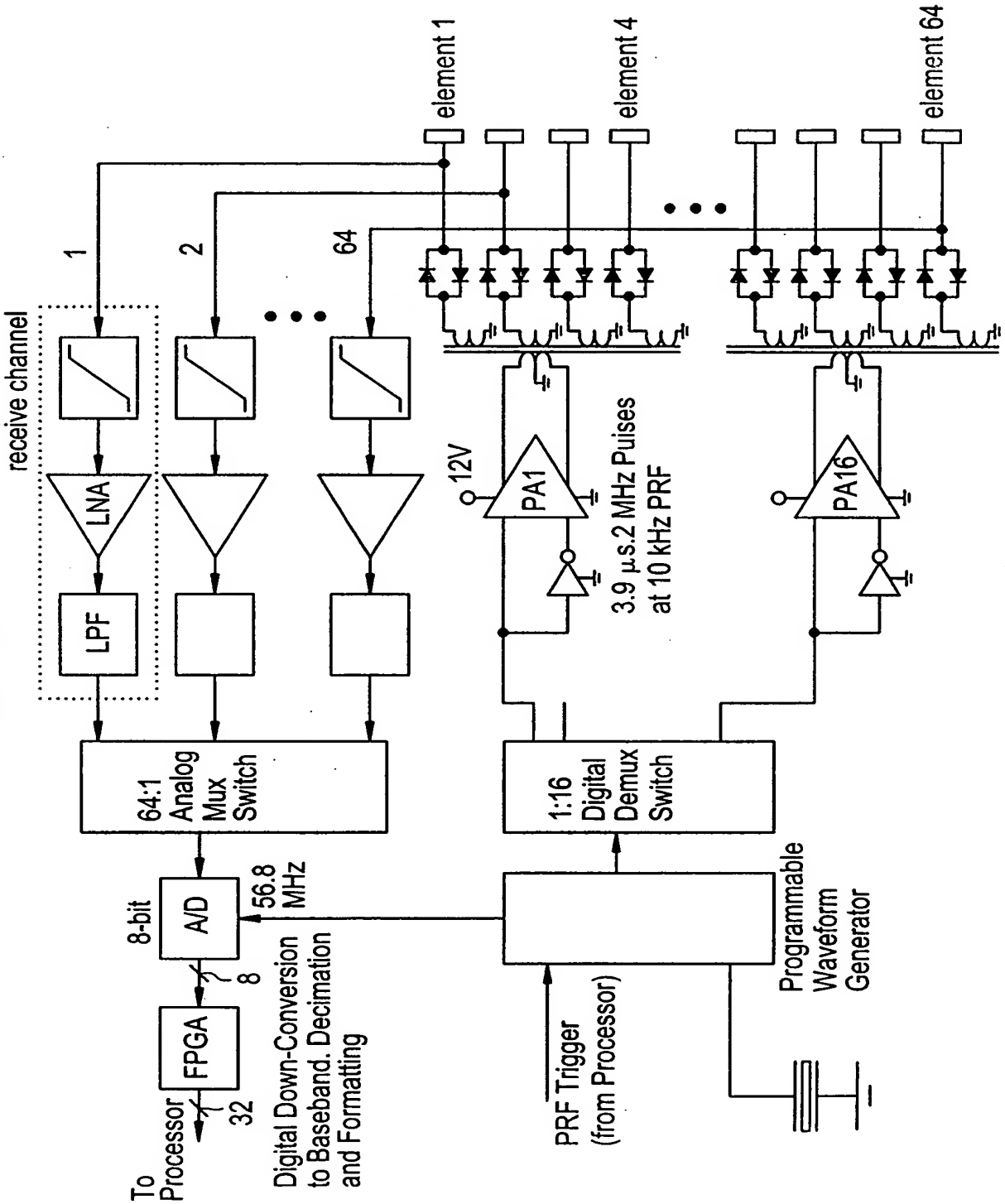

element 1
element 4
element 64
1
2
64
receive channel
LNA
LPF
12V
PA1
PA16
3.9 µs.2 MHz Puises
at 10 kHz PRF
64:1
Analog
Mux
Switch
1:16
Digital
Demux
Switch
8-bit
A/D
56.8
MHz
8
FPGA
32
To
Processor
Digital Down-Conversion
to Baseband. Decimation
and Formatting
PRF Trigger
(from Processor)
Programmable
Waveform
Generator

FIG. 10

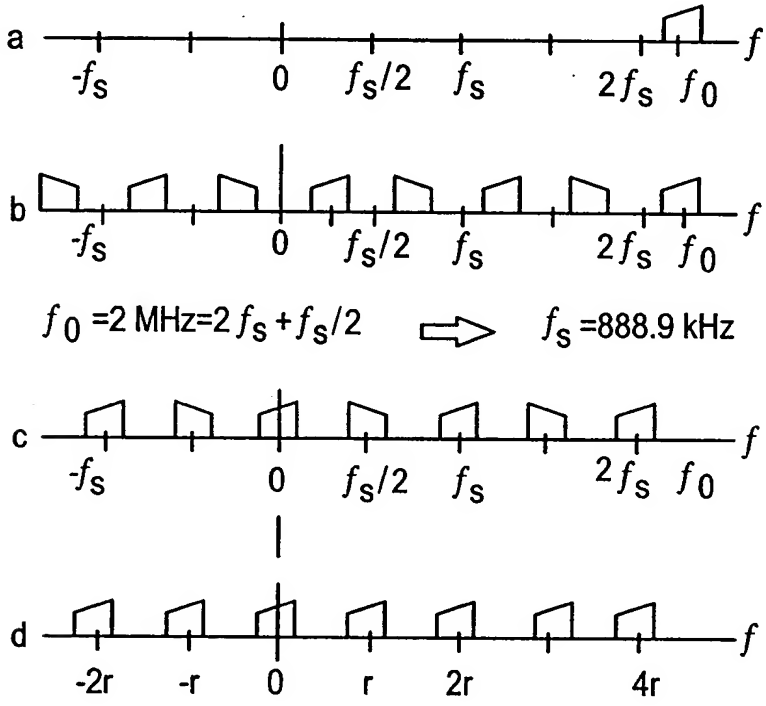

a
f
-fs
0
fs/2
fs
2fs
f0
b
f
-fs
0
fs/2
fs
2fs
f0
f0 =2 MHz=2 fs +fs/2
fs =888.9 kHz
c
f
-fs
0
fs/2
fs
2fs
f0
d
f
-2r
-r
0
r
2r
4r

FIG. 11

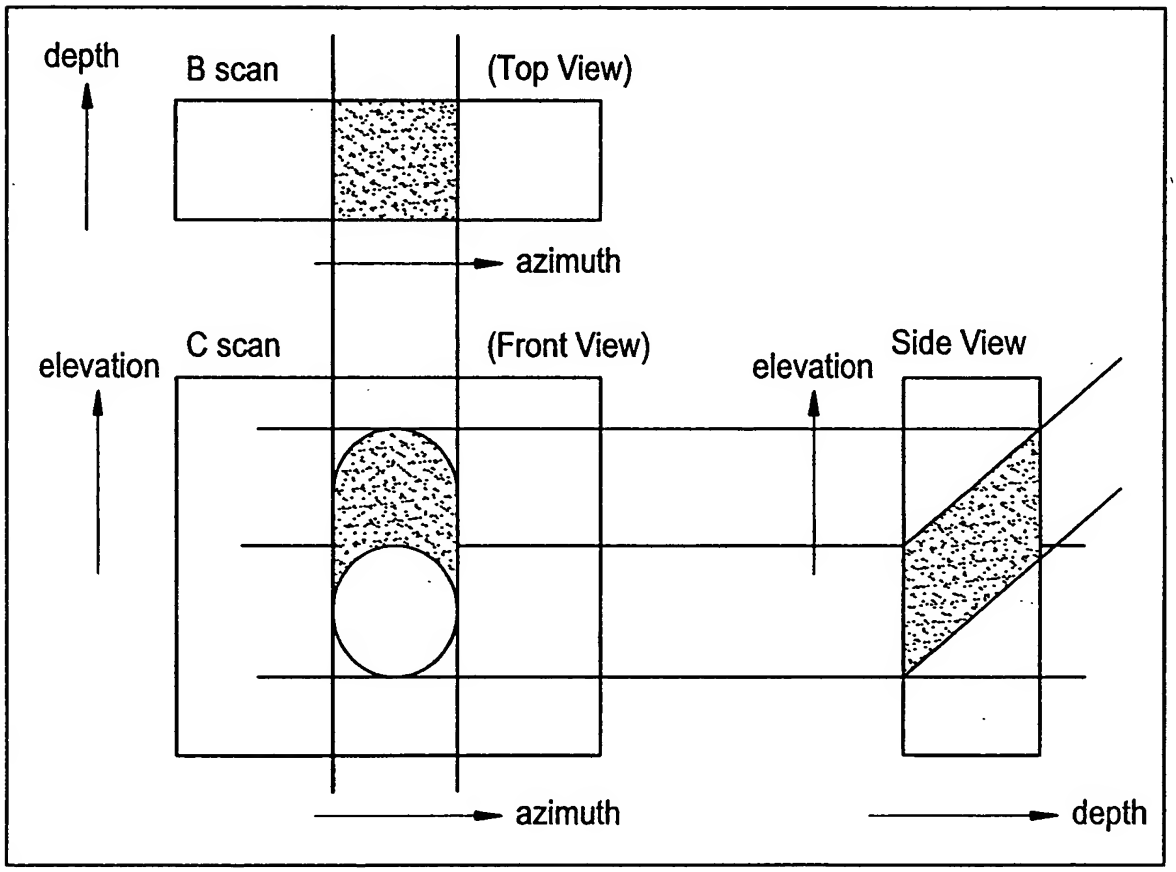

depth
B scan
(Top View)
azimuth
elevation
C scan
(Front View)
elevation
Side View
azimuth
depth

FIG. 12

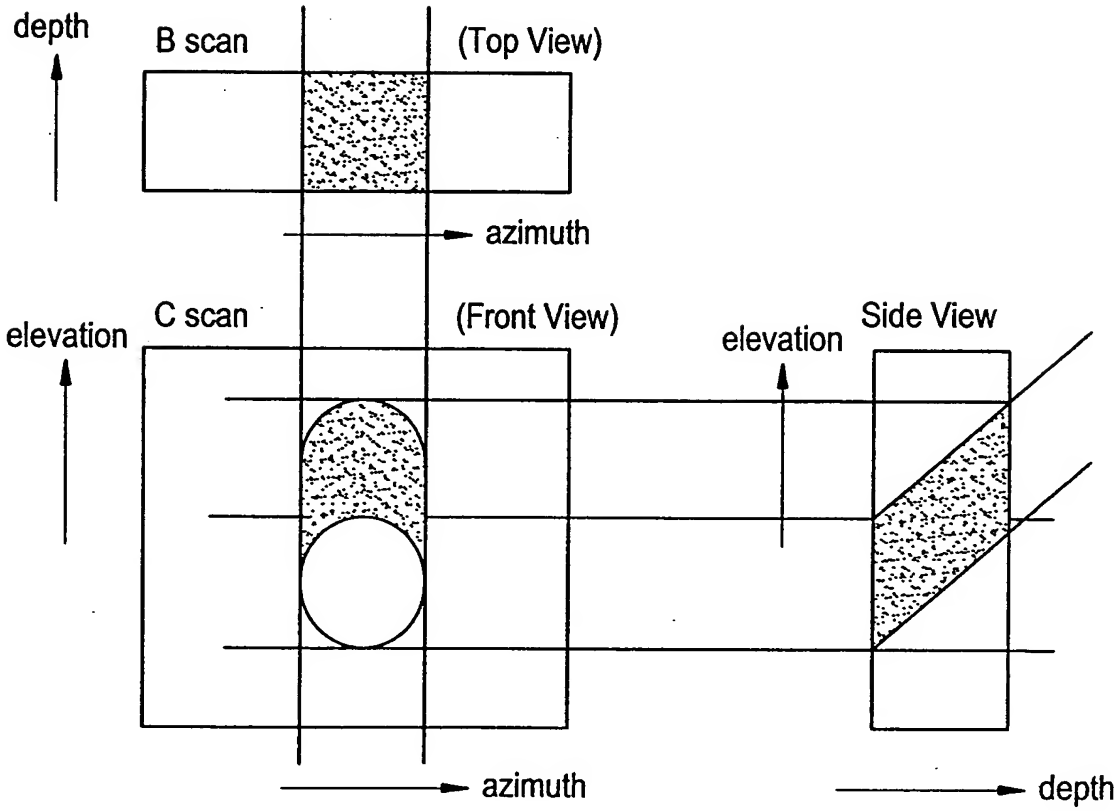
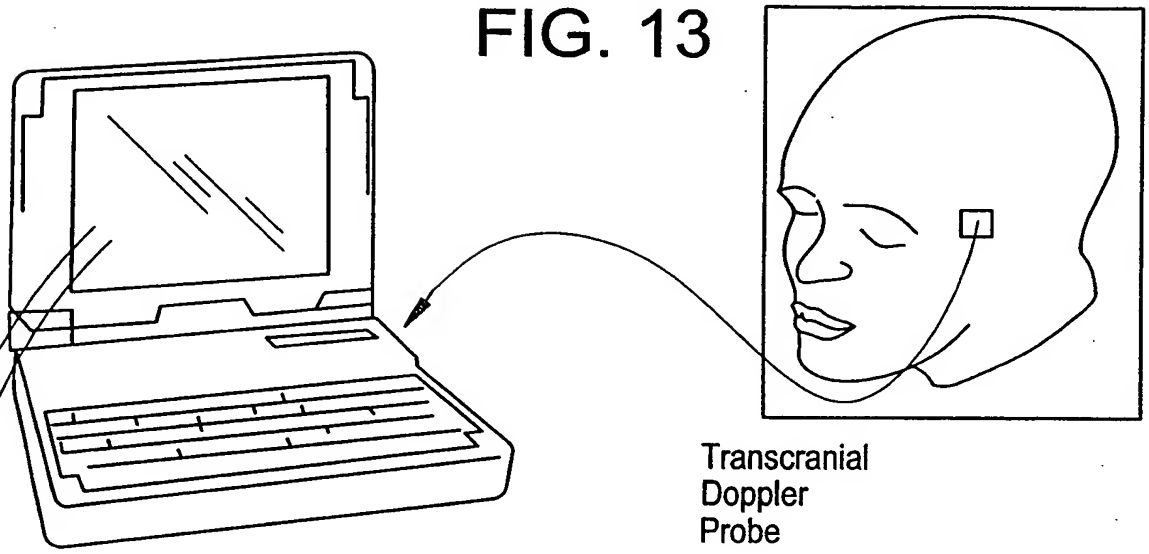
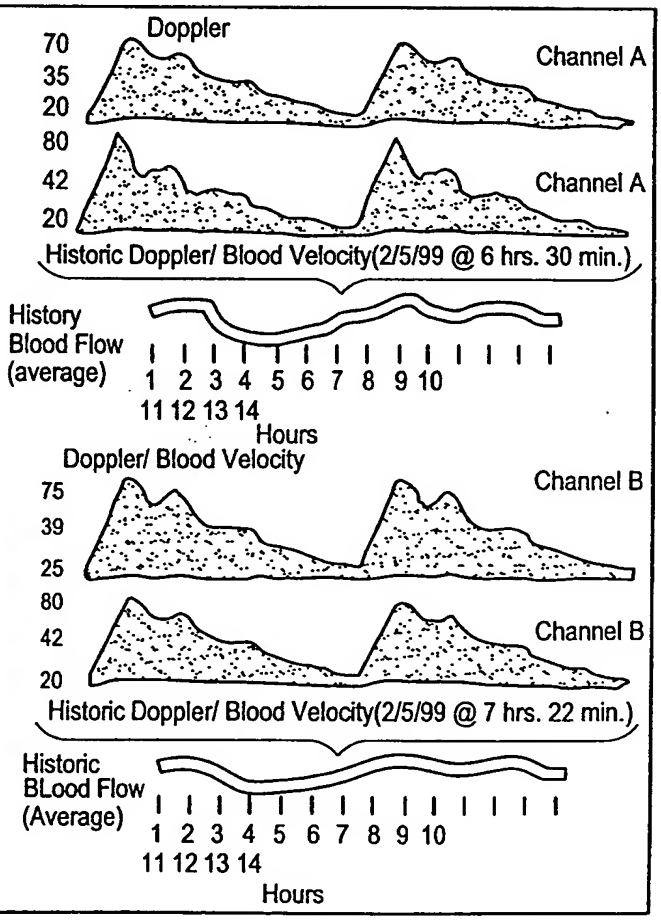

depth
B scan
(Top View)
azimuth
elevation
C scan
(Front View)
elevation
Side View
azimuth
depth

FIG. 13



Parameters

Pulse (BPM)	66	
Channel	A	B
Doppler/ Blood Vel(cm/ sec)		
Average	35	39
Peak	70	75
Min	20	25
Blood Flow (ml/ sec)		
1 min. average	4.9	5.3
1 hr. average	4.7	4.5
Location (mm)	62	52
Tilt Angle (deg.)	1.5+	3.2+
Pan Angle (deg)	3.5-	5.6-
Power level	28	28
Acquisition	Yes	Yes



Screen Display

A thin flexible bundle of cables makes a 90-degree turn to exit the pad housing parallel to the planar phased array transducer so that the pad can be easily attached to the head of a trauma victim or surgical patient.

FIG. 14

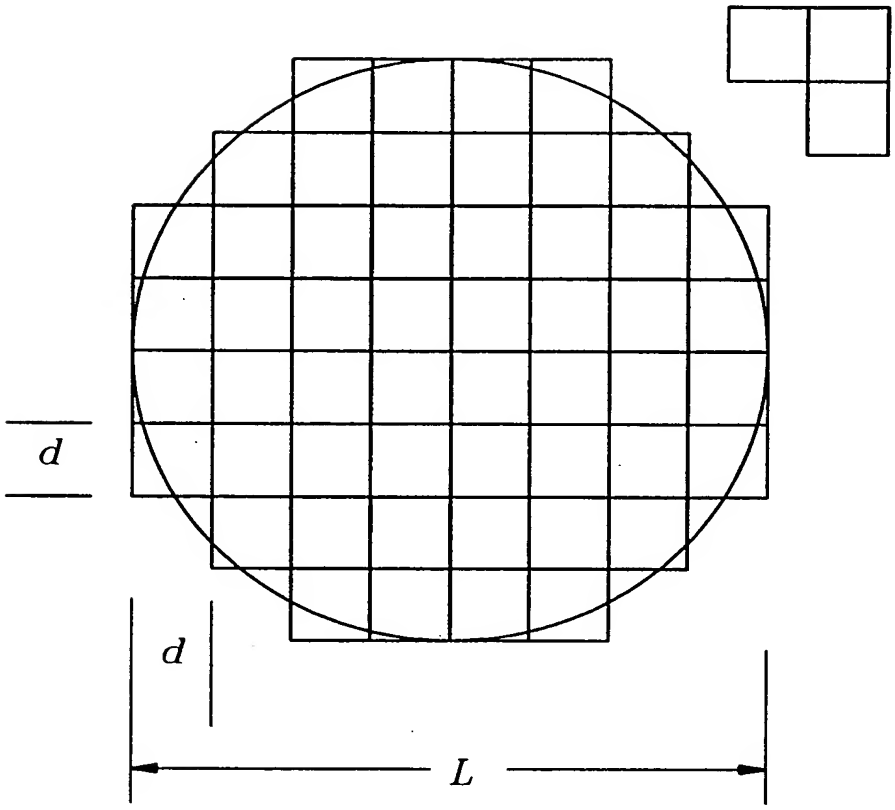


FIG. 15

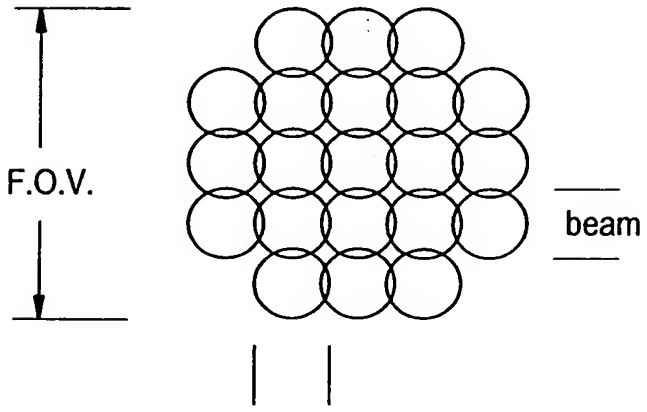


FIG. 16

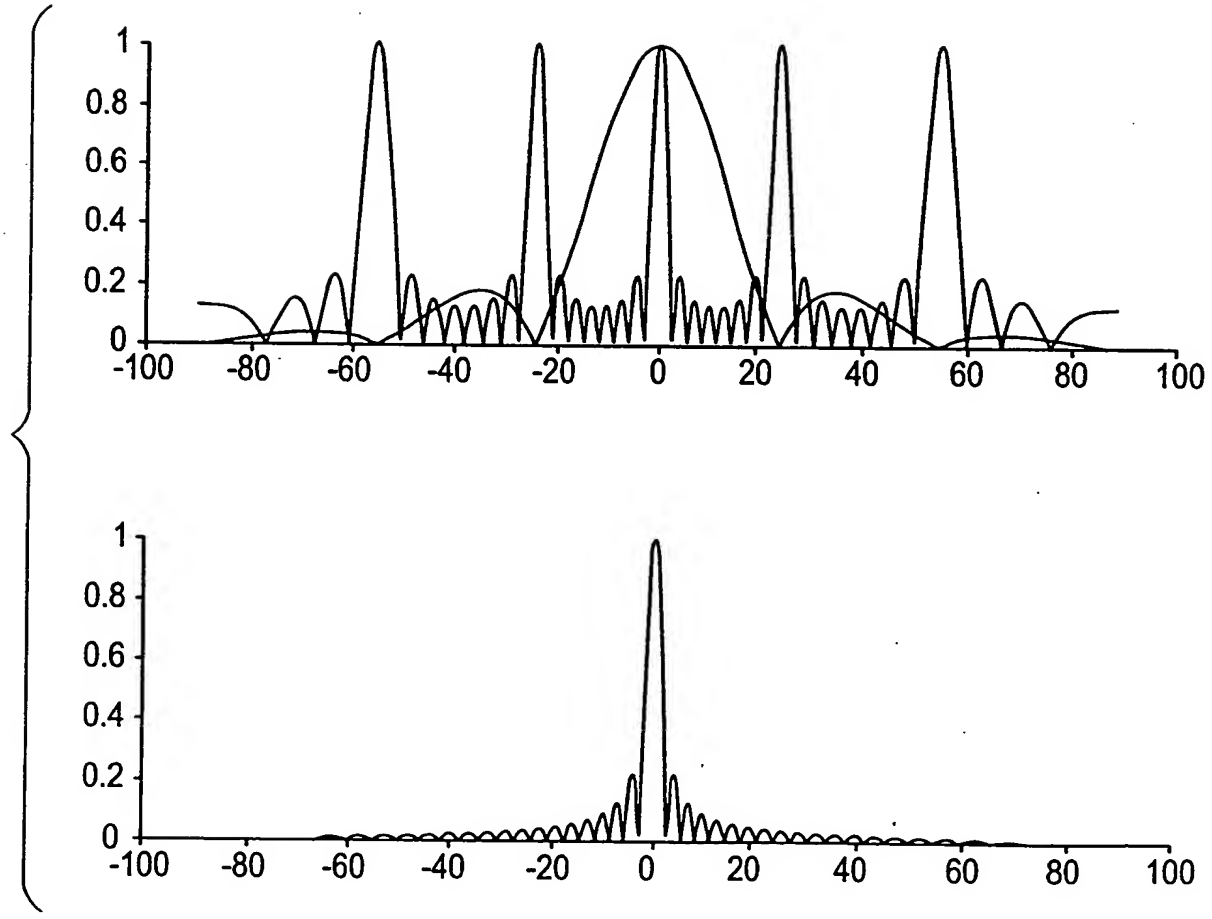

1
0.8
0.6
0.4
0.2
0
-100
-80
-60
-40
-20
0
20
40
60
80
100
1
0.8
0.6
0.4
0.2
0
-100
-80
-60
-40
-20
0
20
40
60
80
100

FIG. 17

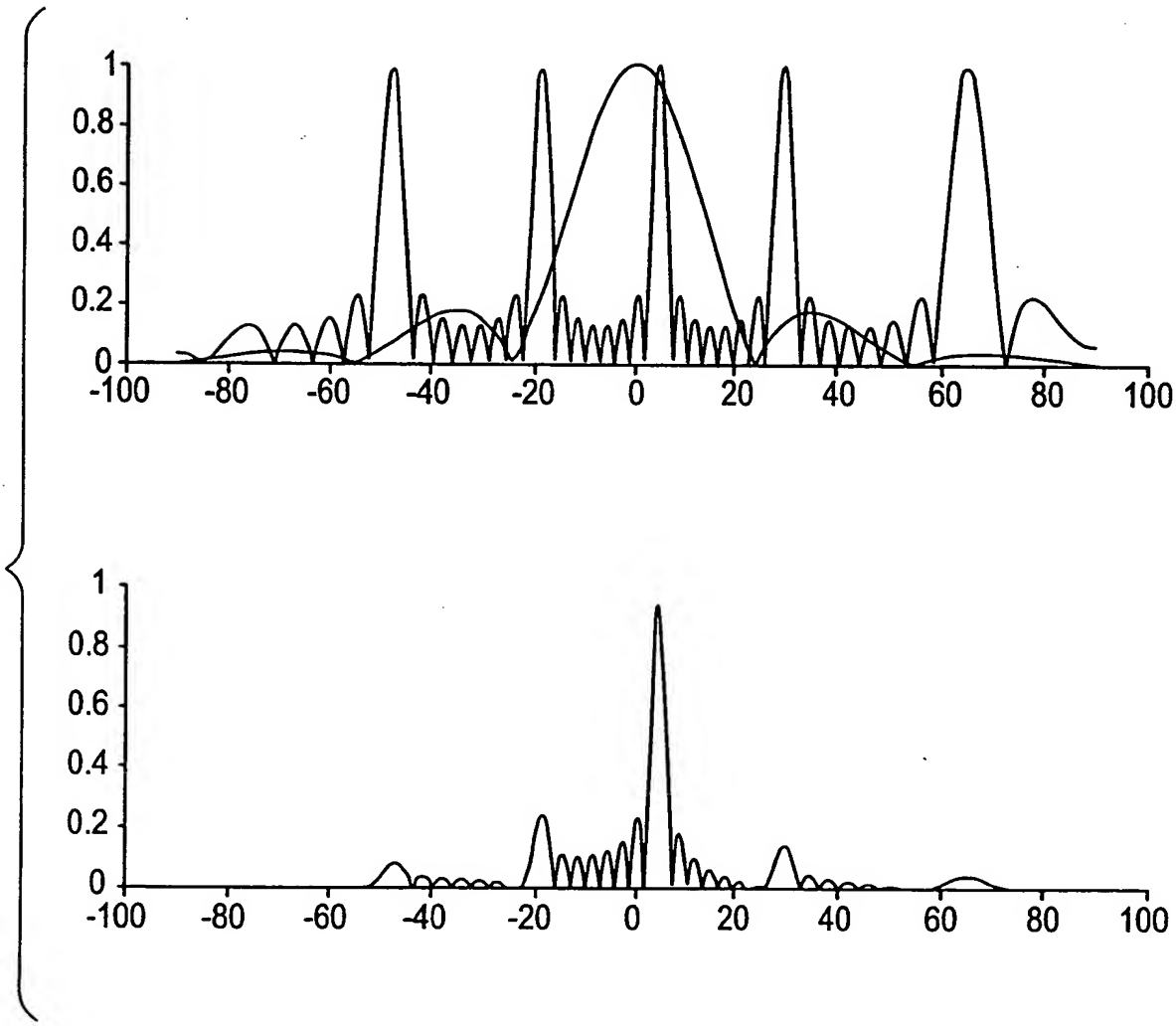

1
0.8
0.6
0.4
0.2
0
-100
-80
-60
-40
-20
0
20
40
60
80
100
1
0.8
0.6
0.4
0.2
0
-100
-80
-60
-40
-20
0
20
40
60
80
100

FIG. 18

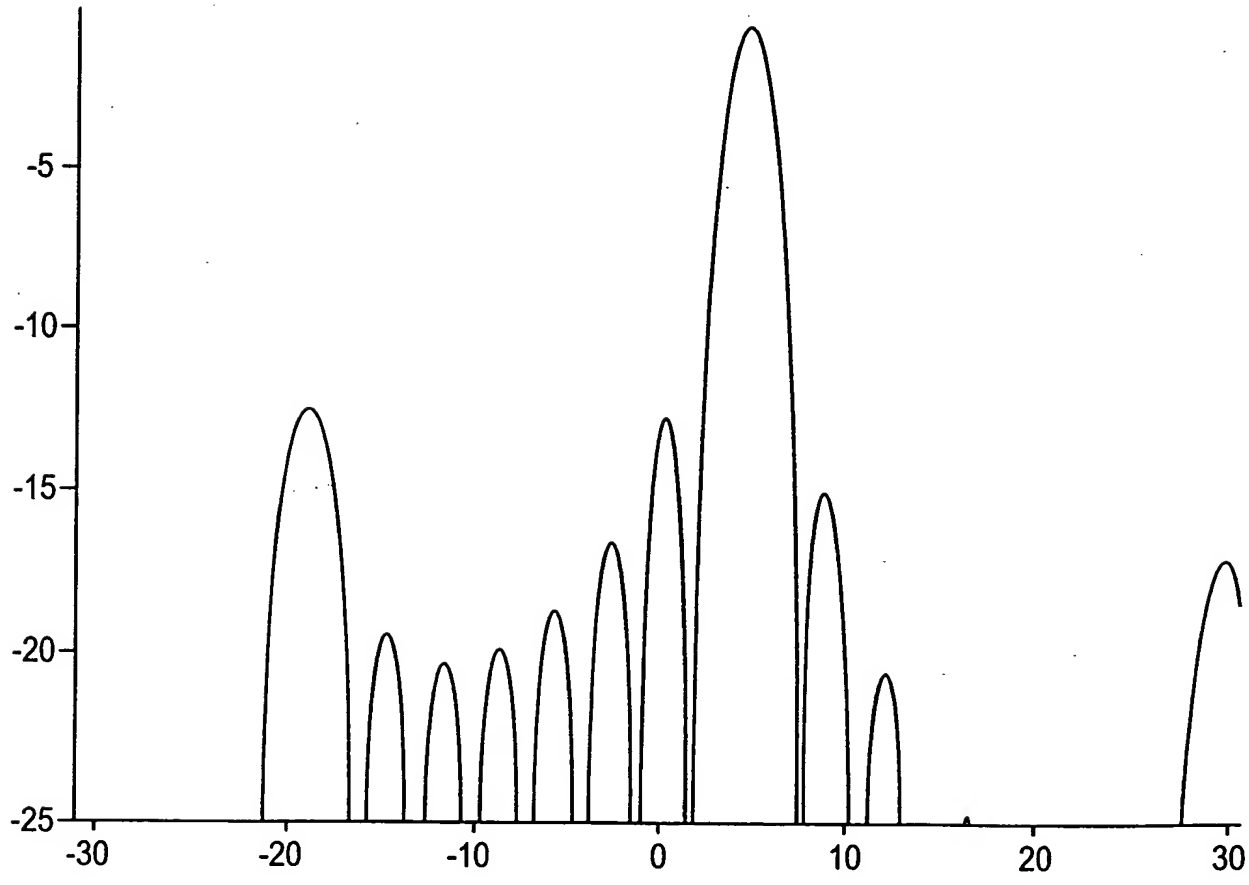


FIG. 19A

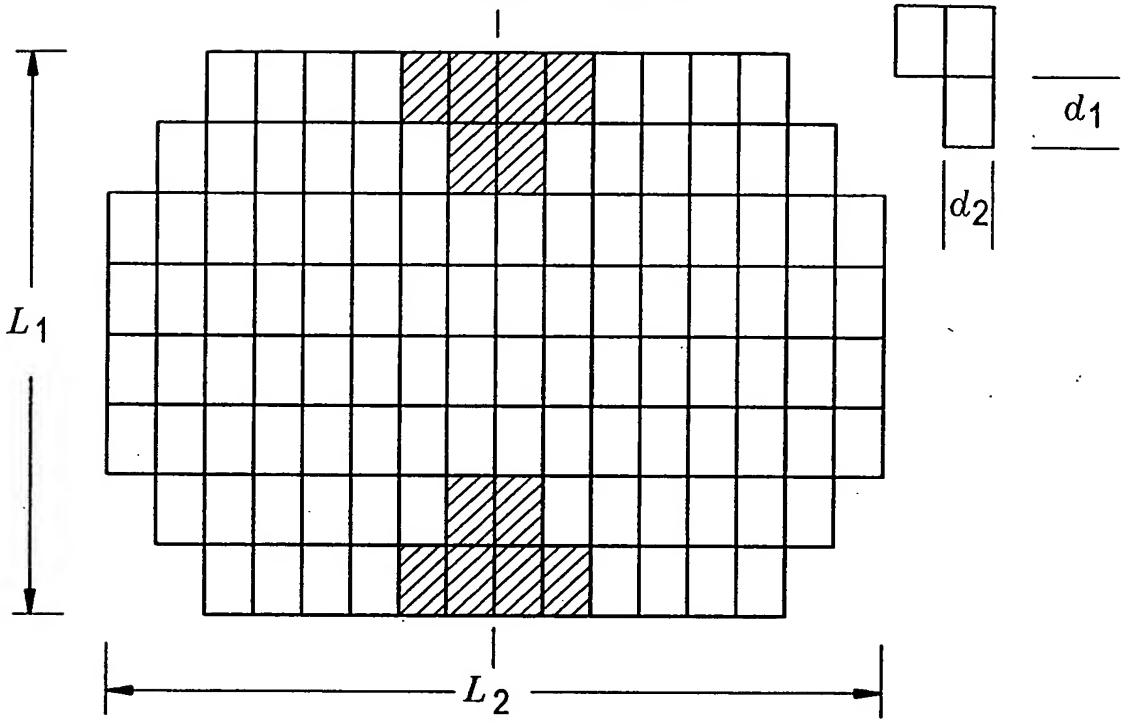


FIG. 19B

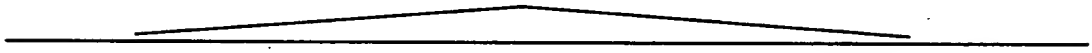


FIG. 20

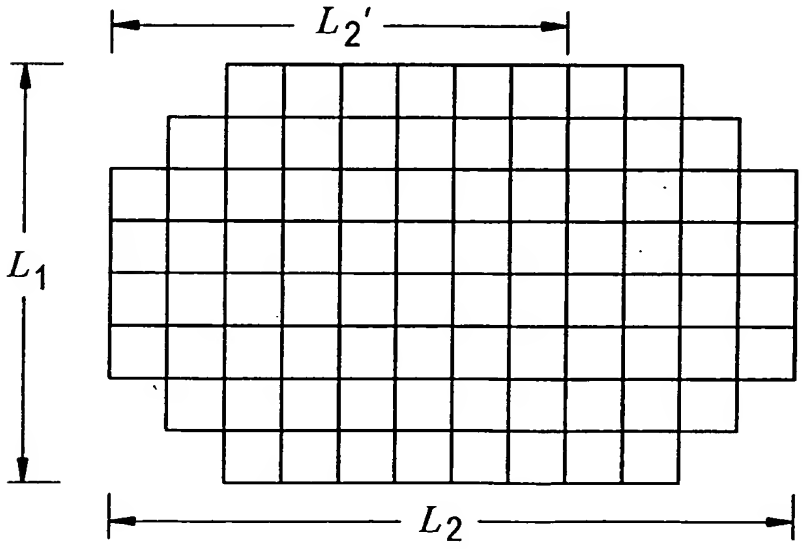


FIG. 21

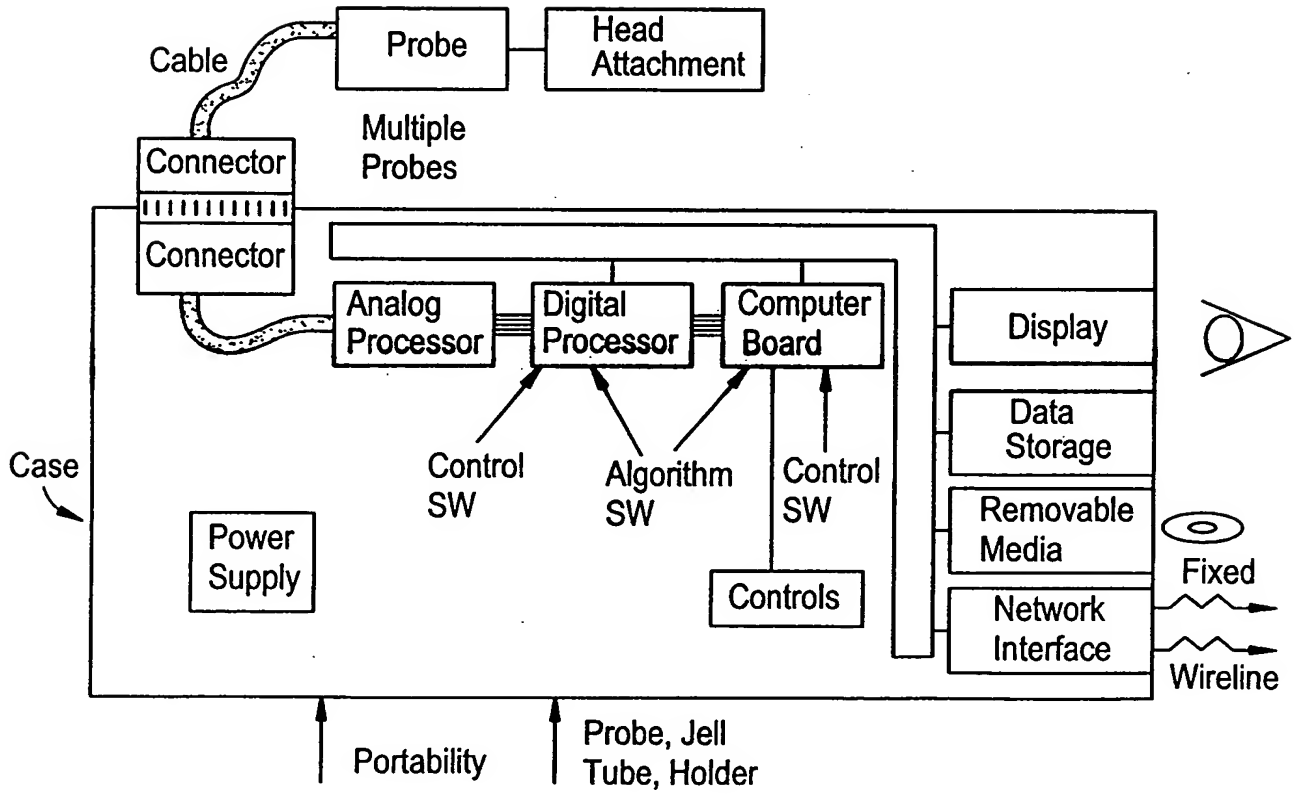

Cable
Probe
Head Attachment
Multiple Probes
Connector
Connector
Analog Processor
Digital Processor
Computer Board
Display
Data Storage
Removable Media
Fixed
Network Interface
Wireline
Case
Control SW
Algorithm SW
Control SW
Power Supply
Controls
Portability
Probe, Jell Tube, Holder

FIG. 22

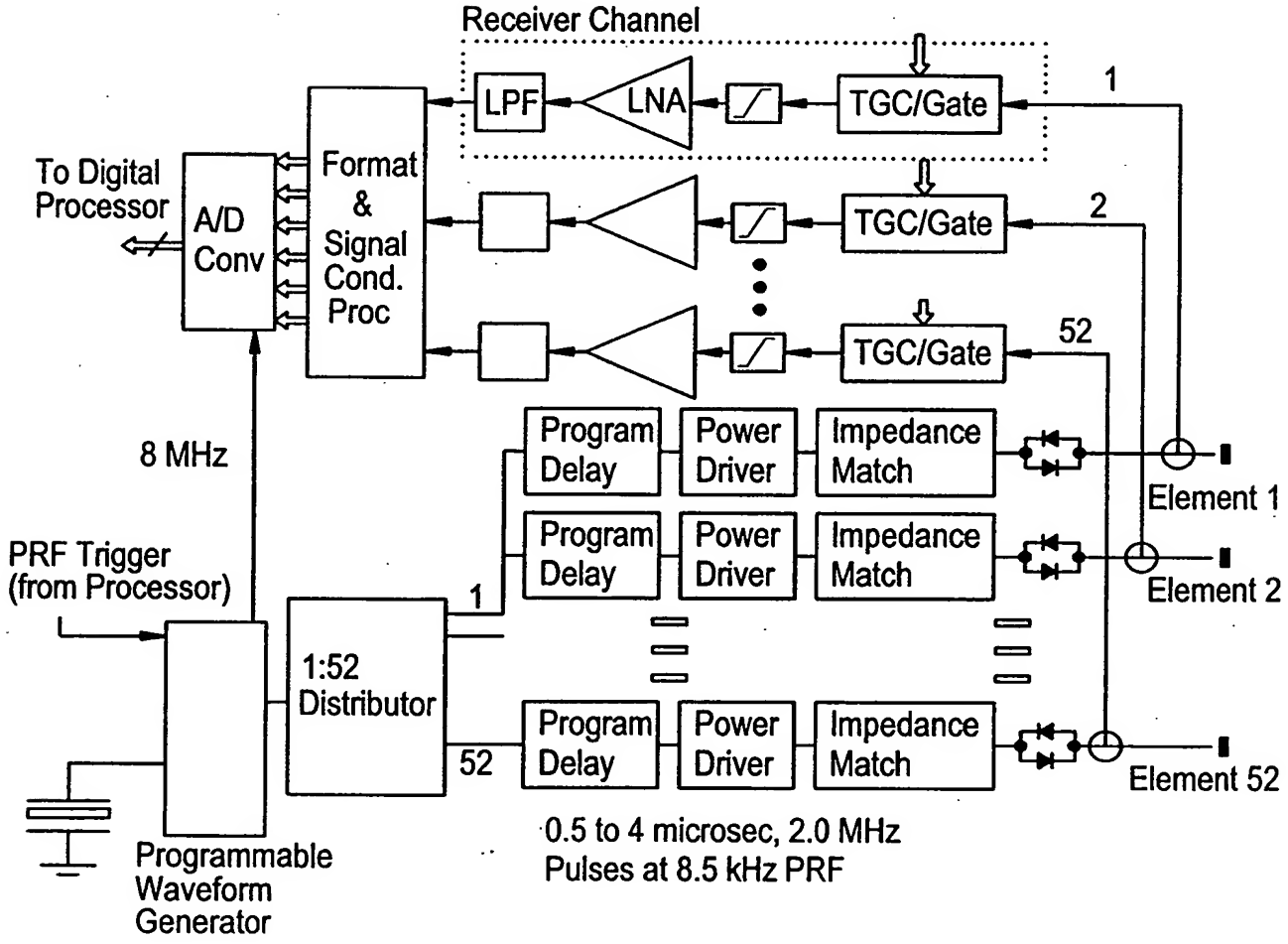
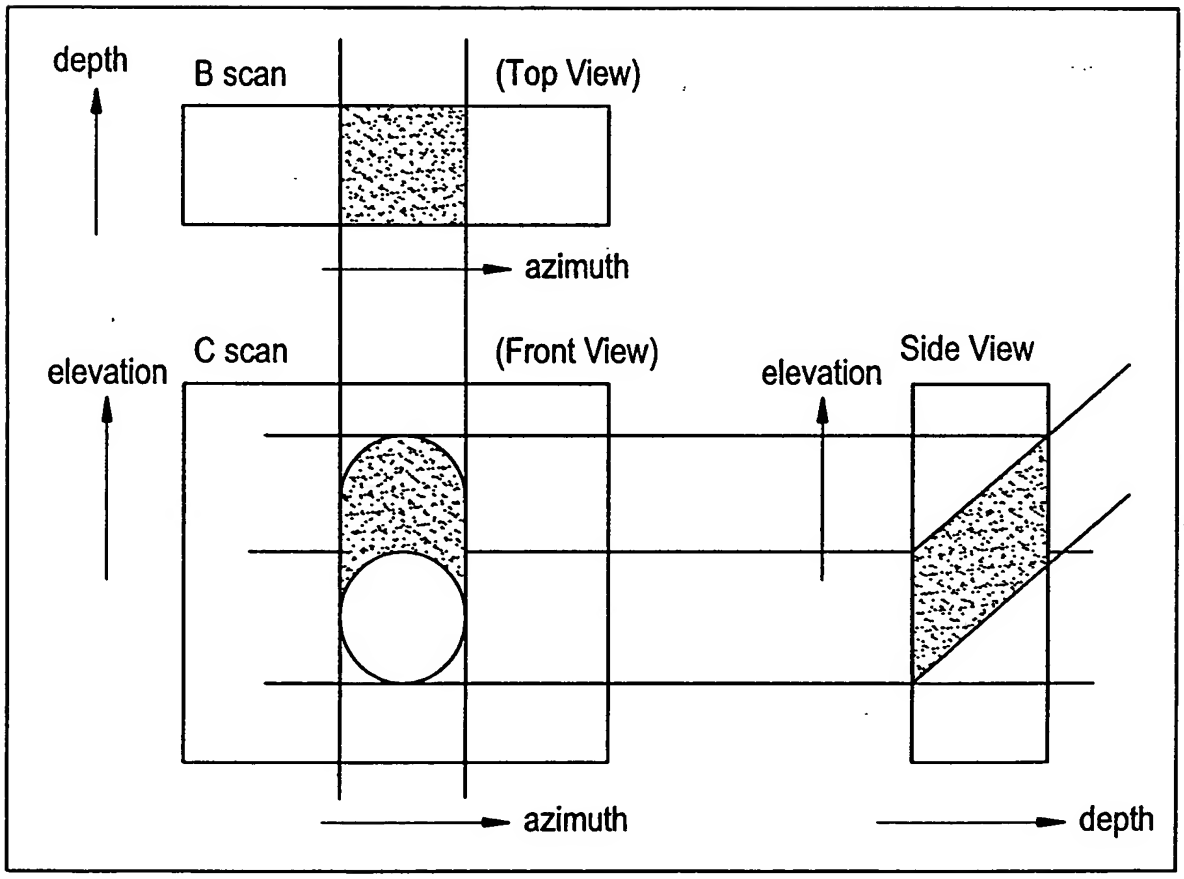

Receiver Channel
LPF
LNA
TGC/Gate
1
2
52
To Digital Processor
A/D Conv
Format & Signal Cond. Proc
8 MHz
PRF Trigger (from Processor)
Program Delay
Power Driver
Impedance Match
Element 1
Element 2
Element 52
1:52 Distributor
Programmable Waveform Generator
0.5 to 4 microsec, 2.0 MHz
Pulses at 8.5 kHz PRF

FIG. 23


depth
B scan
(Top View)
azimuth
elevation
C scan
(Front View)
elevation
Side View
azimuth
depth